PERSONAL INFORMATION

LAST NAME: Papazoglou
FIRST NAME: Symeon
DATE OF BIRTH: 23/12/1983
PLACE OF BIRTH**:** Piraeus

COMMUNICATION

ADDRESS: Alexandras Avenue 15
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Education

2001: Greek-French school 'Saint Paul' (grade 17.5/20.0)

2010: Undergraduate studies at the Materials Science Department, University of Patras (grade: 6.83/10.00)

Diploma Thesis: “Synthesis, characterization and applications of chemically functionalized carbon nanotubes» (abstract is provided at the end of this C.V.)

2013: Master Courses at the Physics Department of the National Technical University of Athens, "Micro-systems and nano-devices" (grade: 8.07/10.00)

Master Thesis: “Laser processing of graphene» (abstract is provided at the end of this C.V.)

2013- : PhD student at the Physics Department of the National Technical University of Athens. PhD dissertation entitled: "Laser processing of nanomaterials for organic electronics applications". Supervisor: Assoc. Professor Ioanna Zergioti.

Foreign languages

English**:** (Very good) Certificate of Proficiency (University of Michigan),

French: (Very good) Diplome d’ Etude en Langue Francaise (DELF 1, DELF 2) and Diplome Approfondi de Langue Francaise (DALF)

Research Experience

2011-2013: Master thesis experiments were conducted at the laboratories of the Physics Department of the National Technical University of Athens, in collaboration with the laboratories of the research Institute N.C.S.R. Demokritos, under the supervision of Assistant Professor Ioanna Zergioti.

2006-2007: Diploma thesis experiments were conducted at the laboratories of Materials Science Department, University of Patras, in collaboration with the laboratories of FORTH/ICE-HT, Patras, under the supervision of Assistant Professor Konstantinos Papaggelis. The following

publication occurred: "Water-soluble carbon nanotubes by redox radical polymerization" Σ. Παπάζογλου, Δ. Λάμπου, Γ. Κανδυλιώτη, Δ. Τάσης, και Κ. Παπαγγελής, poster στα πρακτικά του XXIII Πανελλήνιου Συνεδρίου Φυσικής Στερεάς Κατάστασης & Επιστήμης Υλικών, 23-26 Σεπτεμβρίου 2007, ΕΚΕΦΕ «ΔΗΜΟΚΡΙΤΟΣ», σελ. 212.

Teaching experience (Laboratory courses at the School of Applied Mathematical and Physical Sciences, National Technical University of Athens)

2013-2014 Winter semester: Laboratory courses on Optical Fibers technology, coupling with laser sources, alignment and coupling of optical fibers.

2014 Spring semester: Laboratory courses on the electrical field mapping using the electrolyte tank method.

2014-2015 Winter semester: Laboratory courses on Optical Fibers technology, coupling with laser sources, alignment and coupling of optical fibers.

2015 Spring semester: Laboratory courses on the Kerr effect, and non linear optics phenomena.

Working experience

2012-2013: Contractual agreement in the frames of the project: "Microelectronics Components for Lab-On-Chip Instruments in Molecular Diagnostics for Genetics and Environmental Applications'.

2014-2015: Contractual agreement in the frames of the project: "NanoTher: Magnetic nanoparticles for targeted treatment using magnetic tomography".

Publications

1. S. Papazoglou, Y.S. Raptis, S. Chatzandroulis, I. Zergioti, "*A study on the pulsed laser printing of liquid-phase exfoliated graphene for organic electronics*", Applied Physics A, (2014).
2. M. Makrygianni, S. Papazoglou, I. Zergioti, "*Direct Laser Printing for Organic Electronics*", IEEE Online Encyclopedia, Book Chapter, (2015).

Conferences - Summer Schools

- SPIE Photonics West 2015, San Francisco, United States, "All laser printed reduced graphene oxide gas sensors", **oral presentation**.
- SPIE Photonics West 2015, San Francisco, United States, "Raman study for

drug delivery applications and tissue imaging", **oral presentation**.

- E-MRS Spring Meeting 2014 Lille, France, Laser transfer and thermal reduction of graphene oxide for chemical sensing applications', **poster presentation**.
- E-MRS Spring Meeting 2014 Lille, France, "Functionalization of carbon-based nanomaterials for magnetic drug delivery applications", **poster presentation.**
- 30th Panhellenic Conference on Solid-State Physics and Materials Science, Heraklion, Crete, September 21-24, 2014, "Chemical functionalization of carbon nanomaterials for magnetic drug delivery applications", **poster presentation**.
- 30th Panhellenic Conference on Solid-State Physics and Materials Science, Heraklion, Crete, September 21-24, 2014, "Laser transfer and thermal reduction of graphene oxide for chemical sensing applications", **poster presentation**.
- 8th International Conference on Flexible Organic Electronics, 7-11 July 2014, Thessaloniki, Greece, "Laser transfer of graphene oxide for chemical sensing applications", **oral presentation**.
- International Conference on Nanosciences and Nanotechnologies, 8-11 July 2014, Thessaloniki, Greece, "Chemically functionalized multi-wall carbon nanotubes for magnetic drug delivery applications", **poster presentation**.
- 12th International Conference on Laser Ablation, COLA 2013, 6-11 October 2013, Ischia, Italy, Laser printed polymeric semiconductor/graphene composite for electronic devices, **poster**.
- XXIX Panhellenic Conference on Solid-State Physics and Materials Science, 22-25 September 2013, Athens, Greece, Laser Induced Forward Transfer as a Tool for the Fabrication of Graphene-Based Organic Electronic Devices', **oral presentation**.
- 7th International Conference on Flexible Organic Electronics, 8-11 July 2013, Thessaloniki, Greece, "Pulsed-laser printing of Graphene/Polymer materials for electronic devices", **oral presentation**.
- E-MRS Spring Meeting 2013 Strasbourg, France, "Laser Induced Forward Transfer of hybrid Graphene/PQT for organic electronics applications", **oral presentation**.
- Fourth International Conference on Micro-electronics, Nanotechnology & MEMs, 12-15 December 2010, NCSR Demokritos, Athens, Greece,

attendee.

- XXIII Panhellenic Conference on Solid State Physics and Materials Science, 23-26 September 2007, N.C.S.R.D., p. 212, "Water soluble carbon nanotubes through processes of redox radical polymerization", **poster**.
- Summer School for advanced materials, Materials Science Institute N.C.S.R.D., July 2003.

Computer knowledge:

Fortran, MSOffice, PSpice, Datlab, Origin, AUTOCAD, Oslo, Labview, Dektak, X'pert Highscore, SPMLabAnalysis

Awards:

Poster Award for the poster presentation of the work entitled: "Laser transfer and thermal reduction of graphene oxide for chemical sensing applications"

Abstract of Diploma Thesis

The current essay is focused on the development of a new reaction about the functionalization of the single-wall carbon nanotubes (SWNTs) surface. With this new approach we tried to achieve the covalent ‘in situ’ radical polymerization of the graphitic sidewalls, where ceric ions were used as initiators. Primarily, we discuss about carbon nanotubes properties and we present several utilities of the carbon nanostructures. Subsequently, we present the basic principles of the characterization methods used on nanotubes and the organology. Some cases of chemical functionalization are discussed also in this thesis, such as covalent and non-covalent approaches. The polymerization reaction mechanism studied in this thesis is presented afterwards; the first step involves the addition of radical species onto the graphitic sidewalls by the reaction of carbon nanotubes with ethanol and di-tert-butyl peroxide, which lead to the formation of several hydroxymethyl groups on the nanotube surface. From these moieties we started the polymerization of vinyl monomers by using ceric ions as initiators. Two polymers were used for this purpose, which are poly(acrylic acid) (PAA) and poly(methyl methacrylate) (PMMA). To examine the nanotube-PAA solubility we made several experiments focused on the reaction of NaOH with these polymer-modified carbon nanotubes in order to find out which concentration of NaOH disperses better the nanotube bundles. The samples of modified nanotubes were characterized by UV-vis, IR, TGA, SEM and Raman spectroscopy. From the TGA curve and the UV-vis spectrum, it was shown that the hydrophilic polymer (PAA) was probably grafted in a more successful

way onto the graphitic sidewalls than the hydrophobic polymer (PMMA). An additional indication for this result is the fact that the van Hove singularities (vHSs) in the nanotube electronic density of states (DOS) were almost disappeared in the case of PAA, which proves the higher alteration caused in the electronic states of SWNTs. Furthermore, UV-vis spectroscopy shows that due the grafting of both studied polymers a loss of intensity of the van Hove singularities takes place indicating the success of the proposed functionalisation scheme. Finally, the results from the Raman spectroscopic measurements are in accordance with the above mentioned functionalisation protocol.

Abstract of Master Thesis

This Master Thesis aims towards the synthesis, characterization and printing, via the LIFT technique, of graphene on conventional silicon as well as flexible polymer substrates, that could be used for chemical sensors applications. Firstly, there is an introduction about graphene's properties and characteristics of this 2D material, in order to better understand its behavior. The first two chapters, deal with the theoretical background, regarding graphene's synthesis methods and chemistry by mixing graphene with polymer matrices or even metallic nanoparticles. Moreover, in chapter 3, there is an introduction about chemical sensors based on graphene, while in chapter 4, takes place a thorough description of material printing by means of laser printing techniques, such as the Laser Induced Forward Transfer, method that has been used in the current thesis. The last 2 chapters deal with the experiments and the characterization that took place. More specifically, in chapter 5, the synthesis methods that have been used are being presented and are: a)graphene synthesis by redox reactions (Hummers-Offemann) and b)graphene synthesis by liquid phase exfoliation of graphite in organic solvents. The synthesized samples were firstly characterized by means of micro-Raman spectroscopy, electrical

measurements and absorption spectroscopy before being printed, by the LIFT technique on different substrates. The successful printing of graphene on various surfaces offers the possibility of incorporating this material into chemical sensors, for the detection of humidity, ethanol, methanol and other analytes, where graphene could be used as the sensing element.